IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (canceled)

Claim 2 (currently amended): A data processing method, ~~wherein~~ comprising the steps of:

processing digital data ~~is processed~~ in bytes to configure one information data block in (M × N) bytes of M rows × N columns;

arranging data ~~is arranged~~ in bytes in the information data block, so that data is arranged in the data transmission order from the 0th column to the (N-1)-th column for each row while data is arranged in the data transmission order from the 0-th row to the (M-1)-th row;

forming a first matrix block of (K × M) rows × N columns ~~matrix block is further constructed which is a set of the information data block, and~~ which is constituted of K information data blocks composed of information data blocks from the 0-th information data block to the (K-1)-th information data block which continue in the data transmission order;

forming a second matrix block of (K × M) rows × N columns which is constituted of K information data blocks composed of information data blocks from the 0-th information data block to the (K-1)-th information data block which continue in the data transmission order;

~~on each column of (K × N) bytes of the matrix block, an~~ creating a first error-correcting word ~~PO ab{(K/2) × Q bytes} is created~~ PO-a{(K/2) × Q} bytes with respect to the (K/2) × (mi + mj) bytes which is constituted by aggregating the even-number rows and

the odd-number rows specified in ~~the K information data block order, and~~ said first and second matrix blocks;

creating a second [[an]] error-correcting word PO-b{(K/2) × Q} bytes ~~is created~~ with respect to the (K/2) × (mj + mi) bytes which is constituted by aggregating the remaining even-number rows and the odd-number rows specified in ~~the K information data~~ said first and second matrix blocks;

scattering and arranging PO-a and PO-b ~~are scattered and arranged~~ into K information data blocks ~~constituted of (M × N) bytes of N rows and N columns so that~~ of said first and second matrix blocks;

forming each column of N columns ~~is formed~~ as two sets of Reed-Solomon code PO of (K/2) × (mi + mj) + Q) bytes and (K/2) × (mj + mi) + Q) bytes (however, M = mi (the number of even-number rows) + mj (the number of odd-number rows) and (Q is an ~~integar~~ integer of 1 or more)); and

further adding the error-correcting word of P bytes ~~is further added~~ for each row of N bytes;

whereby as an overall block an error-correcting product code block is realized which constitutes (K × (M + Q)) × (N + F)) or (K × (M + 2Q) × (N + P)) bytes Reed-Solomon error-correcting word having K information data block of (K × M × N) bytes as information portion.

Claim 3 (currently amended): The processing method according to claim 2, wherein when M is an even number, and Q is 1,

arranging the even number rows of the even-number-th information data block and the odd-number rows of the odd-number-th information data block ~~are aggregated~~ to create the PO-a; and [[while]]

arranging the odd number rows of the even-number-th information data block and the even number rows of the odd-number-th information data block ~~are aggregated~~ to [[25]] create PO-b.

Claim 4 (currently amended): The data processing method according to claim 2, wherein when Q is 2 or more, and the M is an [[even]] odd number,

arranging the even number rows of the even-number-th information data blocks and the odd-number rows of the odd-number-th information data blocks ~~are aggregated~~ to create the PO-a; and [[while]]

arranging the odd number rows of the even-number-th information data blocks and the even number rows of the odd-number-th information data blocks ~~are aggregated~~ to create PO-b.

Claim 5 (currently amended): The data processing method according to claim 2, wherein when Q is 2 or more and M is an even number,

arranging the even-number rows of all the information data blocks ~~are aggregated~~ to create the PO-a; and [[while]]

arranging the odd-number rows of all the information data blocks ~~are aggregated~~ to create the PO-b.

Claim 6 (currently amended): A data processing apparatus, ~~wherein~~ comprising:

means for processing digital data ~~is processed~~ in bytes to configure one information data block in (M × N) bytes of M rows and N columns;

means for arranging data ~~is arranged~~ in bytes in the information data block, so that data is arranged in the data transmission order from the 0th column to the (N-1)-th column for

each row while data is arranged in the data transmission order from the 0-th row to the (M-1)-th row;

means for forming a first matrix block of (K × M) rows × N columns matrix block ~~is further constructed which is a set of the information data block, and~~ which is constituted of K information data blocks composed of information data blocks from the 0th information data block to the (K-1)-th information data block which continue in the data transmission order;

means for forming a second matrix block of (K × M) rows × N columns which is constituted of K information data blocks composed of information data blocks from the 0-th information data block to the (K-1)-th information data block which continue in the data transmission order;

means for creating a first ~~on each column of (K × N) bytes of the matrix block, an~~ error-correcting word ~~PO-a{(K/2) × Q bytes} is created~~ PO-a{(K/2) × Q} bytes with respect to the (K/2) × (mi + mj) bytes which is constituted by aggregating the even-number rows and the odd-number rows specified in ~~the K information data block order, and~~ said first and second matrix blocks;

means for creating a second [[an]] error-correcting word PO-b {(K/2) × Q} bytes ~~is created~~ with respect to the (K/2) × (mj + mi) bytes which is constituted by aggregating the remaining even-number rows and the odd-number rows specified in ~~the K information data~~ said first and second matrix blocks;

means for scattering and arranging PO-a and PO-b ~~are scattered and arranged~~ into K information data blocks ~~constituted of (M × N) bytes of M rows and N columns so that~~ of said first and second matrix blocks;

means for forming each column of N columns ~~is formed~~ as two sets of Reed-Solomon code PO of (K/2) × (mi + mj) + Q) bytes and (K/2) × (mj + mi) + Q) bytes (however, M = mi

(the number of even-number rows) + mj (the number of odd-number rows) and (Q is an ~~integar~~ integer of 1 or more)); and

means for further adding the error-correcting word of P bytes ~~is further added~~ for each row of N bytes;

whereby as an overall block an error-correcting product code block is realized which constitutes (K × (M + Q) × (N + P)) or (K × (M + 2Q) × (N + P)) bytes Reed-Solomon error-correcting word having K information data blocks of (K × M × N) bytes as information portion.

Claim 7 (currently amended): ~~A recording medium~~ The data processing apparatus according to claim 6, wherein [[an]] the error-correcting product code [[is]] blocks are recorded ~~with the data processing method according to claim 1 or 2~~ to a recording medium.

Claims 8-10 (canceled)

Claim 11 (new): A data processing method, wherein,

digital data is processed in bytes to configure one information data block in (M × N) bytes of M rows × N columns,

data is arranged in bytes in the information data block, so that data is arranged in the data transmission order from the 0th column to the (N-1)-th column for each row while data is arranged in the data transmission order from the 0-th row to the (M-1)-th row,

a first matrix block of (K × M) rows × N columns is constituted of K information data blocks composed of information data blocks from the 0-th information data block to the (K-1)-th information data block which continue in the data transmission order,

a second matrix block of (K × M) rows × N columns is constituted of K information data blocks composed of information data blocks from the 0-th information data block to the (K-1)-th information data block which continue in the data transmission order,

a first error-correcting word PO-a{(K/2) × Q} bytes is created with respect to the (K/2) × (mi + mj) bytes which is constituted by aggregating the even-number rows and the odd-number rows specified in said first and second matrix blocks,

a second error-correcting word PO-b {(K/2) × Q} bytes is created with respect to the (K/2) × (mj + mi) bytes which is constituted by aggregating the remaining even-number rows and the odd-number rows specified in said first and second matrix blocks,

PO-a and PO-b are scattered and arranged into K information data blocks of said first and second matrix blocks, and each column of N columns is formed as two sets of Reed-Solomon code PO of (K/2) × (mi + mj) + Q) bytes and (K/2) × (mj + mi) + Q) bytes (however, M = mi (the number of even-number rows) + mj (the number of odd-number rows) and (Q is an integer of 1 or more)), and

the error-correcting word of P bytes is further added for each row of N bytes,

whereby as an overall block an error-correcting product code block is realized which constitutes (K × (M + Q)) × (N + F)) or (K × (M + 2Q) × (N + P)) bytes Reed-Solomon error-correcting word having K information data block of (K × M × N) bytes as information portion, the data processing method comprising the steps of:

receiving the error-correcting product code block;

rearranging the error-correcting product code block into a first block which is a state when the first error-correcting word PO-a{(K/2) × Q} bytes is created, and rearranging the error-correcting product code block into a second block which is a state when the first error-correcting word PO-a{(K/2) × Q} bytes is created; and

processing an error correcting of PO series against to the first and second blocks.

Claim 12 (new): A data processing apparatus, wherein,

digital data is processed in bytes to configure one information data block in (M × N) bytes of M rows × N columns,

data is arranged in bytes in the information data block, so that data is arranged in the data transmission order from the 0th column to the (N-1)-th column for each row while data is arranged in the data transmission order from the 0-th row to the (M-1)-th row,

a first matrix block of (K × M) rows × N columns is constituted of K information data blocks composed of information data blocks from the 0-th information data block to the (K-1)-th information data block which continue in the data transmission order,

a second matrix block of (K × M) rows × N columns is constituted of K information data blocks composed of information data blocks from the 0-th information data block to the (K-1)-th information data block which continue in the data transmission order,

a first error-correcting word PO-a{(K/2) × Q} bytes is created with respect to the (K/2) × (mi + mj) bytes which is constituted by aggregating the even-number rows and the odd-number rows specified in said first and second matrix blocks,

a second error-correcting word PO-b {(K/2) × Q} bytes is created with respect to the (K/2) × (mj + mi) bytes which is constituted by aggregating the remaining even-number rows and the odd-number rows specified in said first and second matrix blocks,

PO-a and PO-b are scattered and arranged into K information data blocks of said first and second matrix blocks, and each column of N columns is formed as two sets of Reed-Solomon code PO of (K/2) × (mi + mj) + Q) bytes and (K/2) × (mj + mi) + Q) bytes (however, M = mi (the number of even-number rows) + mj (the number of odd-number rows) and (Q is an integer of 1 or more)), and

the error-correcting word of P bytes is further added for each row of N bytes,

whereby as an overall block an error-correcting product code block is realized which constitutes (K × (M + Q)) × (N + F)) or (K × (M + 2Q) × (N + P)) bytes Reed-Solomon error-correcting word having K information data block of (K × M × N) bytes as information portion, the data processing apparatus comprising:

means for receiving the error-correcting product code block;

means for rearranging the error-correcting product code block into a first block which is a state when the first error-correcting word PO-a{(K/2) × Q} bytes is created, and rearranging the error-correcting product code block into a second block which is a state when the first error-correcting word PO-a{(K/2) × Q} bytes is created; and

means for processing an error correcting of PO series against to the first and second blocks.

Claim 13 (new): A recording medium, wherein digital data is processed in bytes to configure one information data block in (M × N) bytes of M rows × N columns,

data is arranged in bytes in the information data block, so that data is arranged in the data transmission order from the 0th column to the (N-1)-th column for each row while data is arranged in the data transmission order from the 0-th row to the (M-1)-th row,

a first matrix block of (K × M) rows × N columns is constituted of K information data blocks composed of information data blocks from the 0-th information data block to the (K-1)-th information data block which continue in the data transmission order,

a second matrix block of (K × M) rows × N columns is constituted of K information data blocks composed of information data blocks from the 0-th information data block to the (K-1)-th information data block which continue in the data transmission order,

a first error-correcting word PO-a{(K/2) × Q} bytes is created with respect to the (K/2) × (mi + mj) bytes which is constituted by aggregating the even-number rows and the odd-number rows specified in said first and second matrix blocks,

a second error-correcting word PO-b {(K/2) × Q} bytes is created with respect to the (K/2) × (mj + mi) bytes which is constituted by aggregating the remaining even-number rows and the odd-number rows specified in said first and second matrix blocks,

PO-a and PO-b are scattered and arranged into K information data blocks of said first and second matrix blocks, and each column of N columns is formed as two sets of Reed-Solomon code PO of (K/2) × (mi + mj) + Q) bytes and (K/2) × (mj + mi) + Q) bytes (however, M = mi (the number of even-number rows) + mj (the number of odd-number rows) and (Q is an integer of 1 or more)), and

the error-correcting word of P bytes is further added for each row of N bytes,

whereby as an overall block an error-correcting product code block is realized which constitutes (K × (M + Q)) × (N + F)) or (K × (M + 2Q) × (N + P)) bytes Reed-Solomon error-correcting word having K information data block of (K × M × N) bytes as information portion, the recording medium comprising:

a control data area provided on a disk; and

a user data area provided on the disk,

wherein the used data in the used data area is formed as said error-correcting product code block.